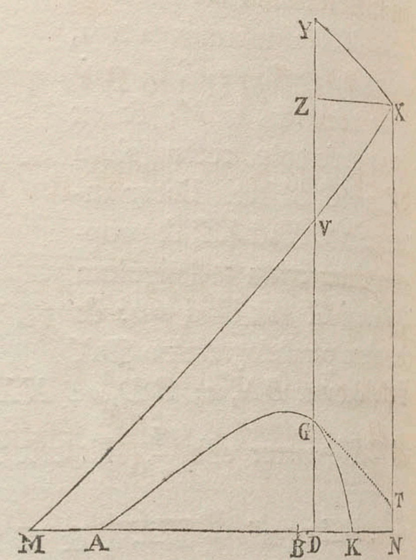
pro So^3, eorumque coefficientes $\frac{m}{n} - \frac{bb}{aa}$, $\frac{bb}{a^3}$ & $\frac{bb}{a^4}$ scribendæ sunt in regula superiore pro Q, R & S. Quo facto prodit medii densitas ut $\dfrac{\frac{bb}{a^4}}{\frac{bb}{a^3}\sqrt{1+\frac{mm}{nn}-\frac{2mbb}{naa}+\frac{b^4}{a^4}}}$ seu $\dfrac{1}{\sqrt{aa+\frac{mm}{nn}aa-\frac{2mbb}{n}+\frac{b^4}{aa}}}$ id est, si in VZ sumatur VY æqualis VG, ut $\frac{1}{XY}$. Namque aa & $\frac{mm}{nn}aa - \frac{2mbb}{n} + \frac{b^4}{aa}$ sunt ipsarum XZ & ZY quadrata. Resistentia autem invenitur in ratione ad gravitatem quam habet $3XY$ ad $2YG$; & velocitas ea est, quacum corpus in parabola pergeret verticem G, diametrum DG, & latus rectum $\frac{XY\ quad.}{VG}$ habente. Ponatur itaque quod medii densitates in locis singulis G sint reciproce ut distantiæ XY, quodque resistentia in loco aliquo G sit ad gravitatem ut $3XY$ ad $2YG$; & corpus de loco A, justa cum velocitate emissum, describet hyperbolam illam AGK. *Q. E. I.*



Exempl. 4. Ponatur indefinite, quod linea AGK hyperbola sit, centro X, asymptotis MX, NX ea lege descripta, ut constructo rectangulo $XZDN$ cujus latus ZD secet hyperbolam in G & asymptoton ejus in V, fuerit VG reciproce ut ipsius ZX vel DN dignitas aliqua DN^n, cujus index est numerus n: & quæratur medii densitas, qua projectile progrediatur in hac curva.

Pro BN, BD, NX scribantur A, O, C respective, sitque VZ ad XZ vel DN ut d ad e, & VG æqualis $\frac{bb}{DN^n}$, & erit DN æqualis

$A - O$, $VG = \frac{bb}{\overline{A-O}|^n}$, $VZ = \frac{d}{e}\overline{A-O}$, & GD seu $NX - VZ - VG$ æqualis $C - \frac{d}{e}A + \frac{d}{e}O - \frac{bb}{\overline{A-O}|^n}$. Resolvatur terminus ille $\frac{bb}{\overline{A-O}|^n}$ in seriem infinitam $\frac{bb}{A^n} + \frac{nbb}{A^{n+1}}O + \frac{nn+n}{2A^{n+2}}bbO^2 + \frac{n^3+3nn+2n}{6A^{n+3}}bbO^3$ &c. ac fiet GD æqualis $C - \frac{d}{e}A - \frac{bb}{A^n} + \frac{d}{e}O - \frac{nbb}{A^{n+1}}O - \frac{+nn+n}{2A^{n+2}}bbO^2 - \frac{+n^3+3nn+2n}{6A^{n+3}}bbO^3$ &c. Hujus seriei terminus secundus $\frac{d}{e}O - \frac{nbb}{A^{n+1}}O$ usurpandus est pro Qo, tertius $\frac{nn+n}{2A^{n+2}}bbO^2$ pro Ro^2, quartus $\frac{n^3+3nn+2n}{6A^{n+3}}bbO^3$ pro So^3. Et inde medii densitas $\frac{S}{R\sqrt{1+QQ}}$, in loco quovis G, fit $\dfrac{n+2}{3\sqrt{A^2+\frac{dd}{ee}A^2-\frac{2dnbb}{eA^n}A+\frac{nnb^4}{A^{2n}}}}$, ideoque si in VZ capiatur VY æqualis $n \times VG$, densitas illa est reciproce ut XY. Sunt enim A^2 & $\frac{dd}{ee}A^2 - \frac{2dnbb}{eA^n}A + \frac{nnb^4}{A^{2n}}$ ipsarum XZ & ZY quadrata. Resistentia autem in eodem loco G fit ad gravitatem ut $3S$ in $\frac{XY}{A}$ ad $4RR$, id est, ut XY ad $\frac{2nn+2n}{n+2}VG$. Et velocitas ibidem ea ipsa est, quacum corpus projectum in parabola pergeret, verticem G, diametrum GD & latus rectum $\frac{1+QQ}{R}$ seu $\frac{2XY\ quad.}{nn+n \text{ in } VG}$ habente. *Q. E. I.*

Scholium.

Eadem ratione qua prodiit densitas medii ut $\frac{S \times AC}{R \times HT}$ in corollario primo, si resistentia ponatur ut velocitatis V dignitas quælibet